

# Schedule Metrics – Beyond the Ordinary

NASA Project Management Challenge 2007  
John Krahula/PM Metrics

# What is a Schedule

- ▶ Model/Simulation of the process leading to the creation of a desired event or deliverable
- ▶ Source of important management information
- ▶ Repository of historic information for contractual purposes and for creating the subsequent schedules

# What Makes a Good Schedule

- ▶ Properly Structured
  - Activity Type Usage
  - Durations, Constraint Use, Logic
  - Follows your Scheduling Business rules
- ▶ Effective and appropriate Statusing Process
- ▶ Effective Coding Strategy
  - WBS is only the beginning
- ▶ Effective Measurement/Reporting Strategy

# Performance Measurement/Metrics

- ▶ Schedules Generate Tons of Information, What is Relevant, Appropriate, In Context.
- ▶ Levels
  - Schedule – Validate the Schedule as a Tool
  - Project – Validate the Project Success
- ▶ Types
  - Structural (S) – Schedule Development/Statusing
  - Progress/Status (S/P)
  - Code/Calculated/Management (Key Performance Indicators etc.) (P)
- ▶ Filter What is Measured

# Metrics in Perspective/Context

- ▶ Snapshot Metrics
  - Description of the Current Situation
- ▶ Trends
  - Analysis of Values over time
  - Trend of Current Period/Snapshot Metrics
  - Examine Cumulative Values – History
  - Time phased Metrics
- ▶ Measurement Strategy Matches Project
  - Not all Projects are the Same
  - PM ROI

# Trip Levels

Step 1 – Set Up Rules and  
Triggers to Highlight Areas for  
Analysis



# Trip Levels

**MAPS - Schedule Detective - Calculation Variables**

<b>Project Related Variables</b> Status Date: 06/23/2006		<b>Total Slack Variables</b> No. Critical Acts Trip Level: 3 Use Percent: <input type="checkbox"/>	
<b>Activity Related Variables</b> No. Start Activities Trip Level: 1 No. Finish Activities Trip Level: 1 No. Isolated Activities Trip Level: 0 Duration Trip Level (Days): 60 # 5		TS Trip Level (-): -1 Step 1 From: 0 To: -10 Step 2 From: -10 To: -22 Step 3 From: -22 To: -64 Step 4 From: -64 To: -999	
<b>Constraint Related Variables</b> Must Start On Trip Level: 2 Start No Later Than Trip Level: 2 Must Finish On Trip Level: 2 Finish No Later Than: 2		<b>Relationship Variables</b> FS Trip Level: 85 Use Percent: <input checked="" type="checkbox"/> SS Trip Level: 10 Use Percent: <input checked="" type="checkbox"/> FF Trip Level: 1 Use Percent: <input checked="" type="checkbox"/> SF Trip Level: 1 Use Percent: <input type="checkbox"/> No. Neg Lag Trip Level: 1 Use Percent: <input type="checkbox"/> No. Pos Lag Trip Level: 1 Use Percent: <input type="checkbox"/>	
<b>Variance Related Variables</b> Finish Variance Trip Level: 10 No. Late Activities Trip Level: 5 Use Percent: <input type="checkbox"/> No. Neg Dur Variance Trip Level: 5 Use Percent: <input type="checkbox"/> No. Pos Dur Variance Trip Level: 5 Use Percent: <input type="checkbox"/> Timeframe for Metrics: 14		Minutes Per Day: 480 Days Per Week: 4	
<input type="button" value="OK (Save)"/>		<input type="button" value="Cancel"/>	

# Filter

Step 2 – When running an analysis, analyze the appropriate information. Get rid of some trees.

# Filter/Setup References

MAPS - Schedule Detective - Status Date/Code

Status Date: 06/04/2005

Days in Status Period: 7

Beginning of Status Period: 05/28/2005

Sort Code for Project (Used to sort analyses by project): SAMP

Use "Schedule Detective Analysis Run Filter" to run analysis on a filtered version of project. ☐

Process Interim Baseline Data

☒ Not Needed  
☐ Start/Finish  
☐ Interim Baseline

☒ S/F or IB 1  
☐ S/F or IB 2  
☐ S/F or IB 3  
☐ S/F or IB 4  
☐ S/F or IB 5  
☐ S/F or IB 6  
☐ S/F or IB 7  
☐ S/F or IB 8  
☐ S/F or IB 9  
☐ S/F or IB 10

Process Which Activity Types: Milestones ☒ Tasks ☒ Summary ☐

Process Which Progress Types: Planned ☒ In Progress ☒ Completed ☐

Only Critical Activities: Critical ☐ Critical is <= 0

Last Status Period Start/Finish Dates: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☒ 9 ☐ 10

Dates Saved? ☒

OK Cancel

# Process and Analyze

## Step 3 – Analyze Results – High Level



# General Information Screen

**PM Metrics - The Schedule Detective - Command and Control Center**

**Current Analysis** | **Browse Analyses**

Analysis Date: 06/20/2006 | Status Date: 06/04/2005 | Start: 04/18/2005 | Project: Sample Project for Analysis 060405 | Code: Samp  
 Finish: 12/21/2006 | File: C:\Datamaps\DistSDP9\Data\Testing Project - 2000 tasks 06C | Calc Type: PIMT

Activity Type	Count	Constraints	Progress	Duration	Total Slack
Activities	1,929	Honor Constraints	Planned: 397	Max Duration: 250.0	Minimum: -3.0
Milestones	417	ASAP: 347	Inprog: 20	# Long Dur: 23	Maximum: 397.0
Tasks	57	ALAP: 1	Complete: 0	Minimum Dur Variance: -46.0	Negative: 17
Summary Acts	360	SNET: 63	Base Start Missing: 0	Maximum Dur Variance: 27.0	Zero: 6
Activity Link States		FNET: 3	Base Finish Missing: 0	Negative Dur Variance: 10	Positive: 394
Start Acts: 39		MSO: 1	Should Have Started: 0	Zero Dur Variance: 397	TS Dist 1: 17
Finish Acts: 53		MFO: 2	Should Have Finished: 3	Positive Dur Variance: 10	TS Dist 2: 0
Isolated Acts: 6		SNLT: 0	Future Start: 0		TS Dist 3: 0
Summary Logic: 1		FNLT: 0	Future Finish: 0		TS Dist 4: 0
Relationship Information	Number: 424				
Ratio: 1.017		Neg Lag Max: 46.000	Finish Variance	Omega Tested Screen	Pos Finish Variance (Late Acts)
FS: 423		Negative Lag: 8	Minimum: -39.0	Negative: 301	< 2 wks: 18
FF: 1		Zero Lag: 414	Maximum: 31.0	Zero: 82	2wks - 1M: 5
SS: 0		Pos Lag Max: 5.000	Int. Base: 0	Positive: 34	1 - 3 Mths: 11
SF: 0		Positive Lag: 2			> 3 Months: 0

Buttons: Analyze | Compare | More Detail | Resources | LS/LF | Score | Delete | Trip Levels | About | Exit

# The High Level View

- ▶ Triage
- ▶ Red is Bad
- ▶ Validate Statusing or Schedule Structure
- ▶ Drill down to a lower level of Detail.

# Find Details, Weights, Those Responsible

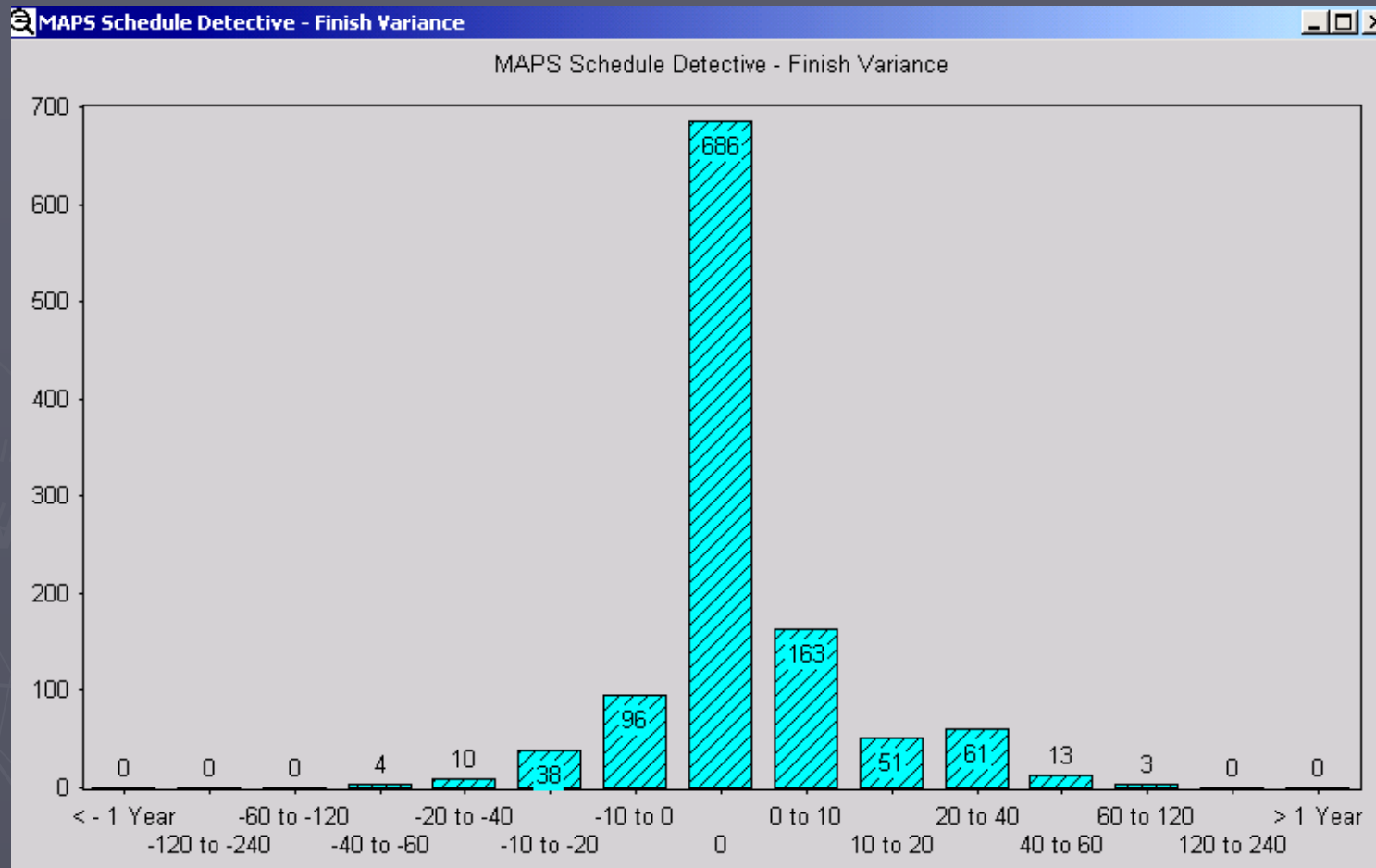
Step 4 – Sort through the detail, find what is important and communicate with those responsible

# Distribution - Buckets

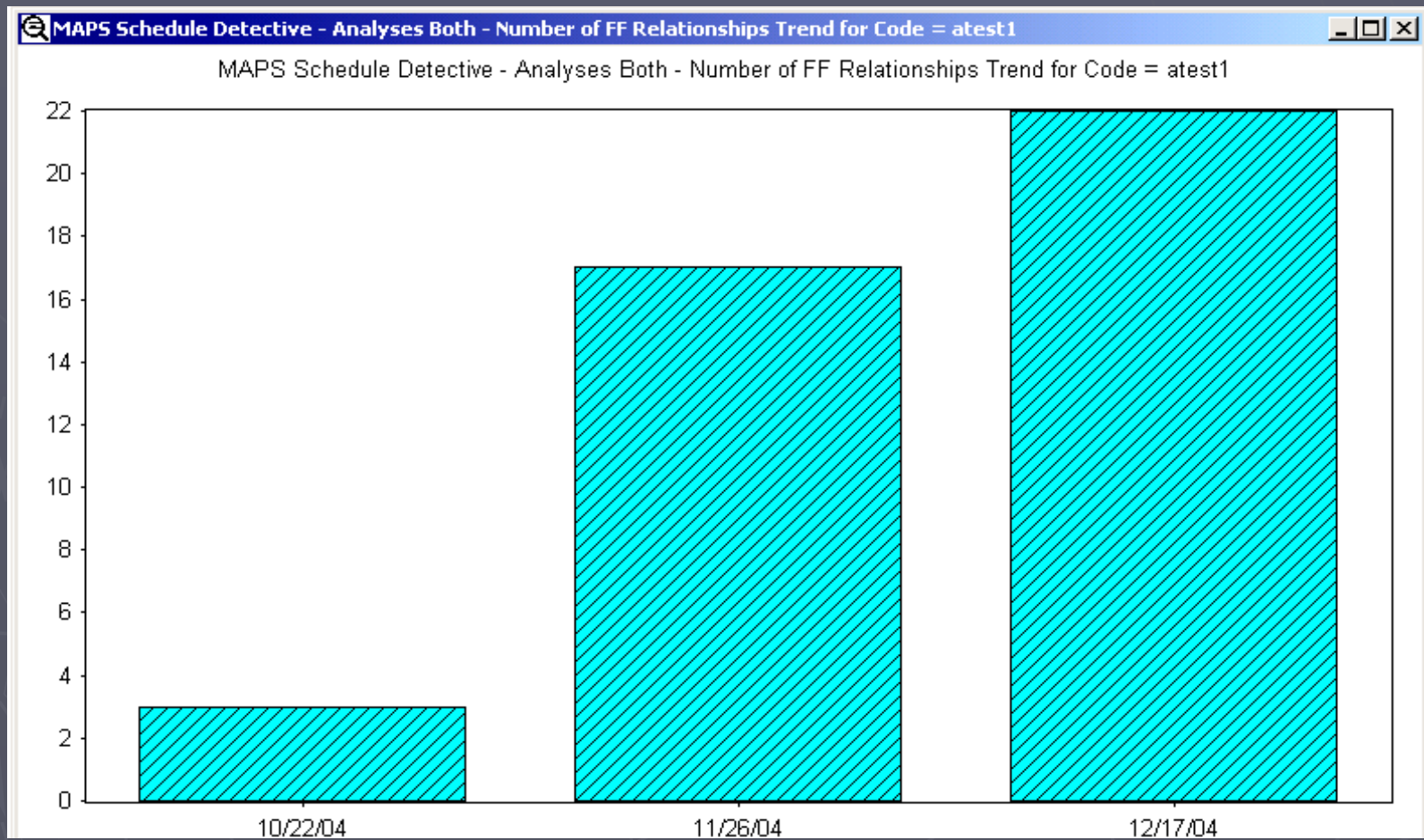
**Additional Detailed Information**

Distributions			Chokepoints/Averages/Other	Aggregations/Burndowns			Constraints		
	Duration	Baseline Duration		Variances			Total Slack	Free Slack	Lag Lead
				Start	Finish	Dur			
0	57	57	> - 1 Year	0	0	0	0	0	0
0 to 10	92	93	-120 to -240	0	0	0	0	0	0
10 to 20	179	185	-60 to -120	0	0	0	0	0	0
20 to 40	62	55	-40 to -60	0	0	1	0	0	1
40 to 60	4	4	-20 to -40	0	6	3	0	0	0
60 to 120	14	13	-10 to -20	0	6	3	0	0	2
120 to 240	6	7	0 to -10	265	289	3	17	0	5
> 1 Year	3	3	0	121	82	397	6	348	414
<input type="button" value="Graph"/> <input type="button" value="Graph"/>			0 to 10	16	18	6	35	10	2
Duration Units			10 to 20	6	5	1	14	3	0
Minutes	<input type="text" value="0"/>		20 to 40	9	11	3	38	7	0
Hours	<input type="text" value="0"/>		40 to 60	0	0	0	3	3	0
Days	<input type="text" value="1929"/>		60 to 120	0	0	0	0	3	0
Weeks	<input type="text" value="0"/>		120 to 240	0	0	0	149	8	0
Months	<input type="text" value="0"/>		> 1 Year	0	0	0	155	35	0
Years	<input type="text" value="0"/>		<input type="button" value="Graph"/> <input type="button" value="Graph"/> <input type="button" value="Graph"/> <input type="button" value="Graph"/> <input type="button" value="Graph"/> <input type="button" value="Graph"/>						

# Distribution Graph



# Trends



# Detail Reports

MAPS - Schedule Detective

Print Preview

schddata

Detail Level Report Relationships/Lags

Sample Project for Analysis 060405 Code: samp Status Date: 06/04/05 Analysis Date: 06/20/06 Filter: PI/NT

Finish Activities

ID#	Name	% Comp	Duration	Start	Finish	Slack	Variances
144	Activity 154 - Task Activity 53	0.000	FR 12/01/05 12/21/05	St -2.00	Tot 260.00		
6010		0.000	Dur 13.00 8 12/05/05 12/23/05	Fin -2.00	Fce 260.00		
NS No	Predecessors 143						
Successors							
178	Activity 189 - Task Activity 66	0.000	FR 05/04/06 11/01/06	St 0.00	Tot 35.00		
5967		0.000	Dur 130.00 8 05/04/06 12/07/06	Fin -26.00	Fce 35.00		
NS No	Predecessors 177						
Successors							
180	Activity 191 - Task Activity 68	0.000	FR 04/26/06 10/24/06	St -6.00	Tot 41.00		
5968		0.000	Dur 130.00 8 05/04/06 12/07/06	Fin -32.00	Fce 41.00		
NS No	Predecessors 179						
Successors							
182	Activity 193 - Task Activity 70	0.000	FR 04/24/06 10/20/06	St 13.00	Tot 43.00		
5969		0.000	Dur 130.00 8 04/05/06 12/14/06	Fin -39.00	Fce 43.00		
NS No	Predecessors 181						
Successors							
184	Activity 195 - Task Activity 72	0.000	FR 05/23/06 11/01/06	St 0.00	Tot 35.00		
5970		0.000	Dur 117.00 8 05/23/06 12/12/06	Fin -29.00	Fce 35.00		
NS No	Predecessors 183						
Successors							
338	Activity 369 - Task Activity 183	0.000	FR 05/04/06 11/01/06	St 0.00	Tot 35.00		
5966		0.000	Dur 130.00 8 05/04/06 12/08/06	Fin -27.00	Fce 35.00		
NS No	Predecessors 357						
Successors							

1 of 9 06/15/06

Samp062006220343 (c:\data\maps\dist\dp9\data\samp062006220343.tRecord: 383/1929 Exclusive

# Summary Reports

Report Designer - details.frx - Page 1

Print Preview 100%

Schedule Detective  
Detail Level - 1

Baseline Starts Within the Status Period

Sample Project for Analysis 060405 Code: ftest Status Date: 06/04/05 Analysis Date:  
01/10/07 Filt: PI/MT

Group Field	text3	Group Value: Amy	No.:	3
Group Field	text3	Group Value: Bill	No.:	9
Group Field	text3	Group Value: George	No.:	7
Group Field	text3	Group Value: Jill	No.:	8
Group Field	text3	Group Value: John	No.:	4
Group Field	text3	Group Value: Kathy	No.:	2
Group Field	text3	Group Value: Kyle	No.:	4
Group Field	text3	Group Value: Will	No.:	26

Ftest011007104008 (c:\data\maps\distdp9\data\ftest011007104008.tst) Record: EOF/1929 Exclusive

# Details – Other/Chokepoints/Averages

**Additional Detailed Information**

**Distributions** **Chokeypoints/Averages/Other** **Aggregations/Burndowns** **Constraints**

**Other Information**

Subprojects:

Taskcalendars:

Deadlines:

Elapsed Duration (ed):

Estimated Duration (?):

**Chokeypoint Analysis**

	Predecessors	Successors
1-2	<input type="text" value="360"/>	<input type="text" value="349"/>
3-4	<input type="text" value="8"/>	<input type="text" value="8"/>
5-8	<input type="text" value="2"/>	<input type="text" value="1"/>
9+	<input type="text" value="2"/>	<input type="text" value="0"/>

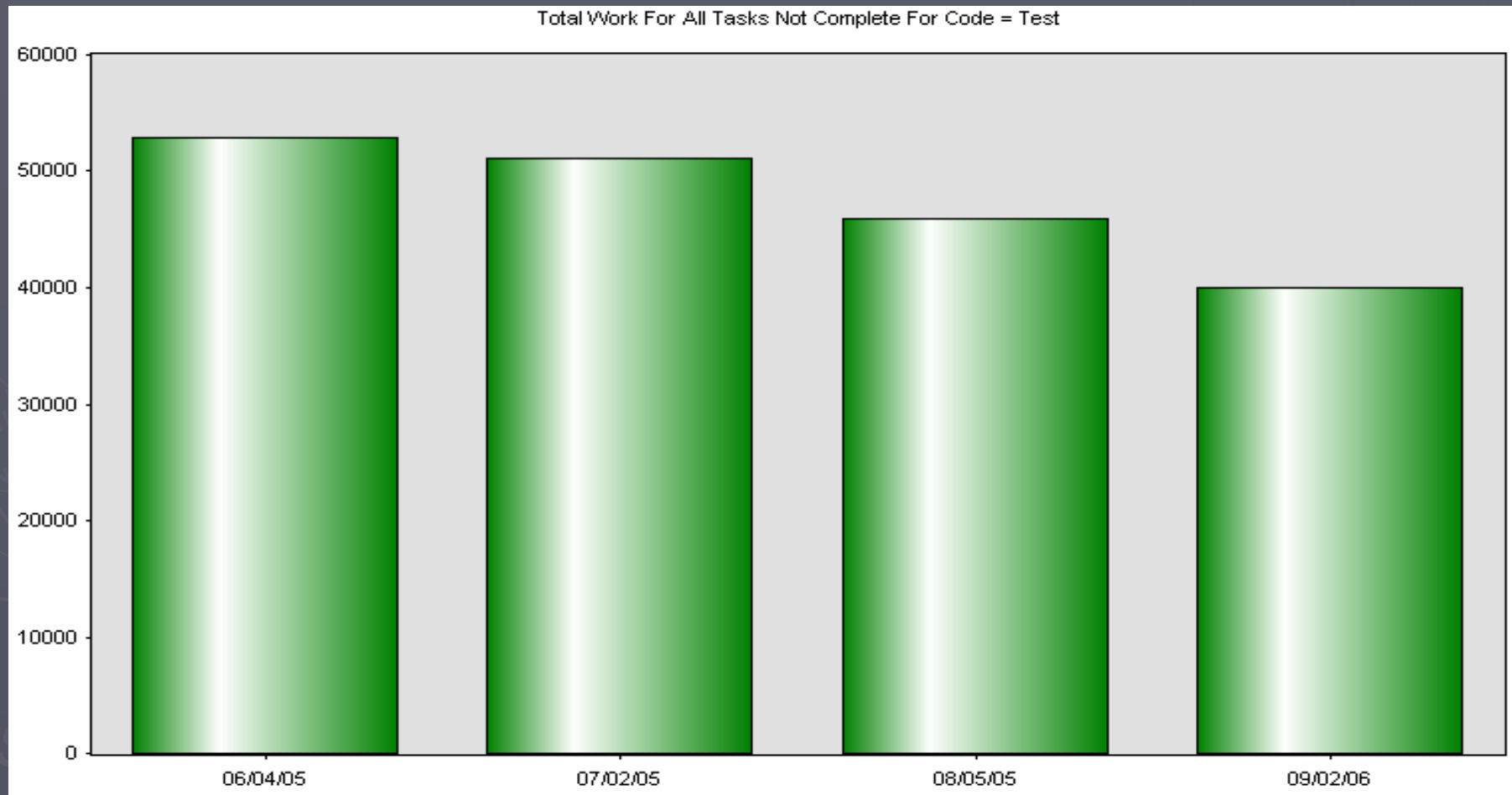
**Averages by Status (No Summaries)**

	All	100%	In Prog	0%	< 100%
<b>Duration (Tasks)</b>	15.61	12.04	20.95	23.29	23.16
<b>Baseline Duration (Tasks)</b>	15.55	11.86	17.30	23.74	23.39
<b>Duration Variance (Tasks)</b>	0.05	0.18	3.65	-0.45	-0.23
<b>Start Variance (Tasks)</b>	1.20	1.46	1.85	-1.34	-1.16
<b>Start Variance (MS)</b>	3.29	4.05	0 - ,N/A	-0.05	-0.05
<b>Start Variance</b>	1.20	2.10	1.85	-1.16	-1.16
<b>Finish Variance (Tasks)</b>	0.66	1.93	5.15	-2.43	-2.01
<b>Finish Variance (MS)</b>	3.11	3.83	0 - ,N/A	-0.05	-0.05
<b>Finish Variance</b>	1.19	2.40	5.15	-2.09	-1.74
<b>Work</b>	84.70	55.40	64.96	151.62	146.81
<b>Baseline Work</b>	43.65	58.57	47.76	9.93	12.03
<b>Actual Work</b>	38.32	55.40	38.24	0.00	2.12
<b>Work Variance</b>	41.05	-3.17	17.21	141.69	134.78
<b>Total Slack</b>	49.62	0 - ,N/A	206.05	168.58	170.38
<b>Free Slack</b>	9.11	0 - ,N/A	19.25	31.89	31.28

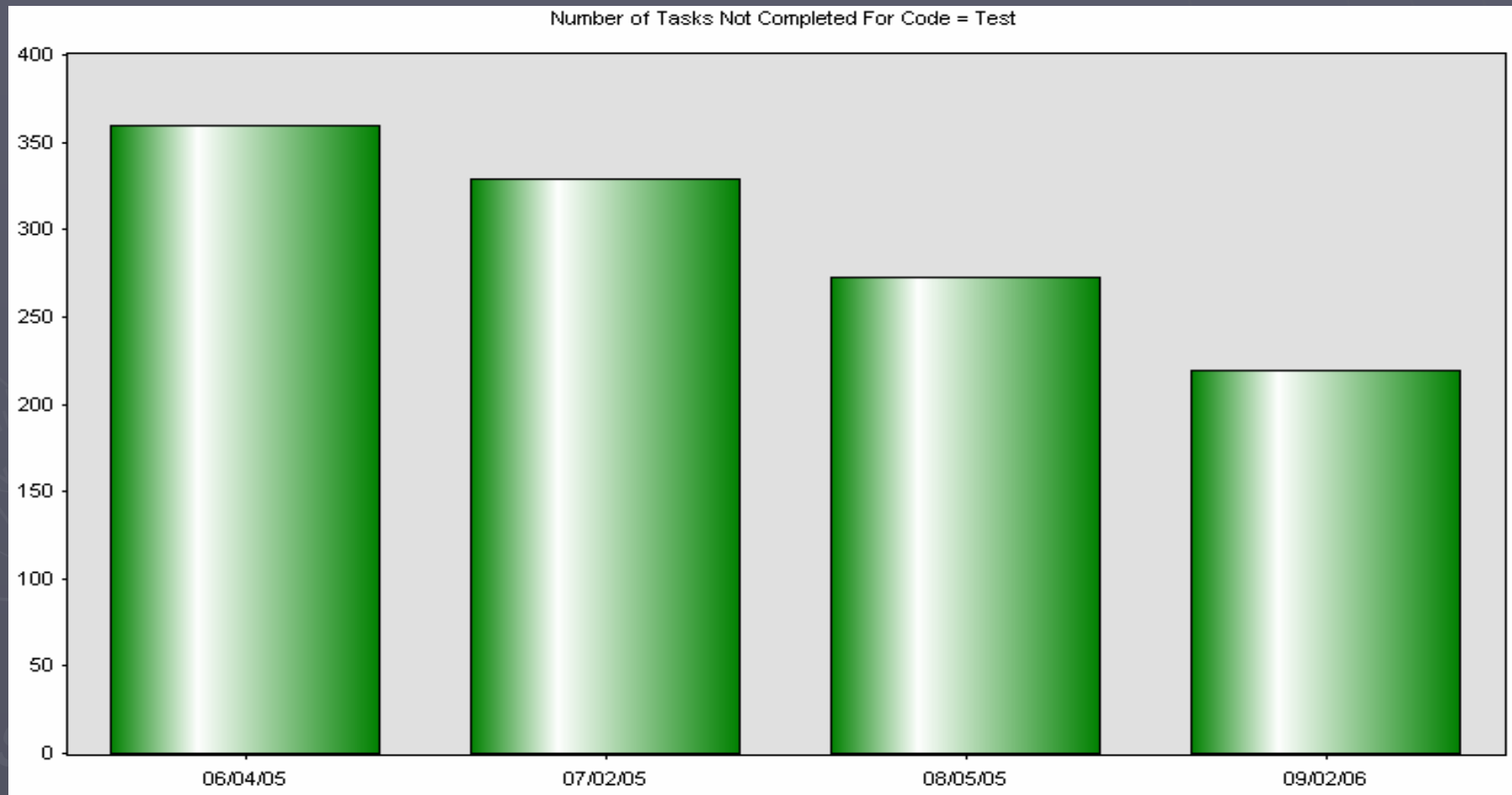
**Ok**



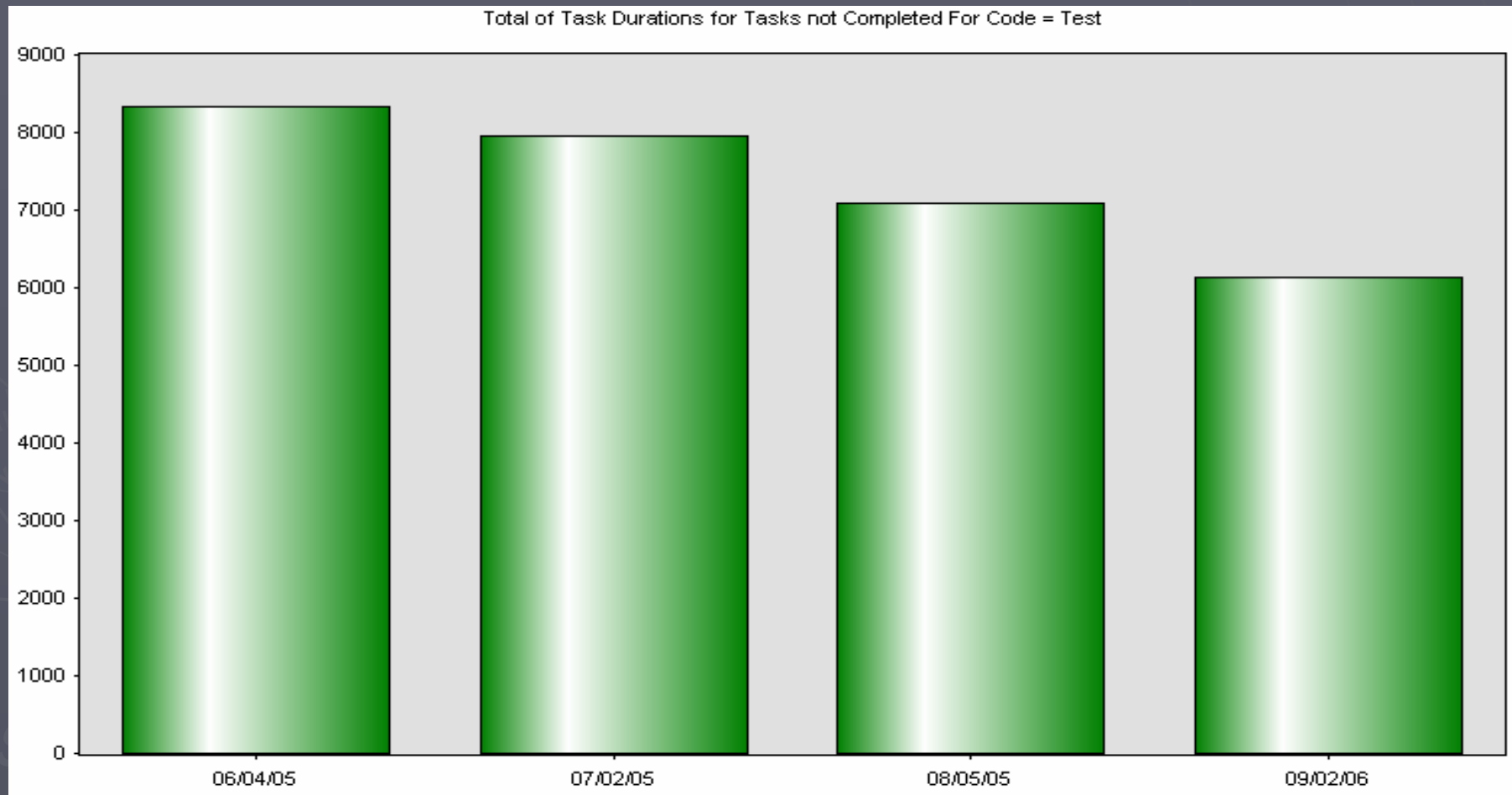
# Work Burndown



# Task Burndown

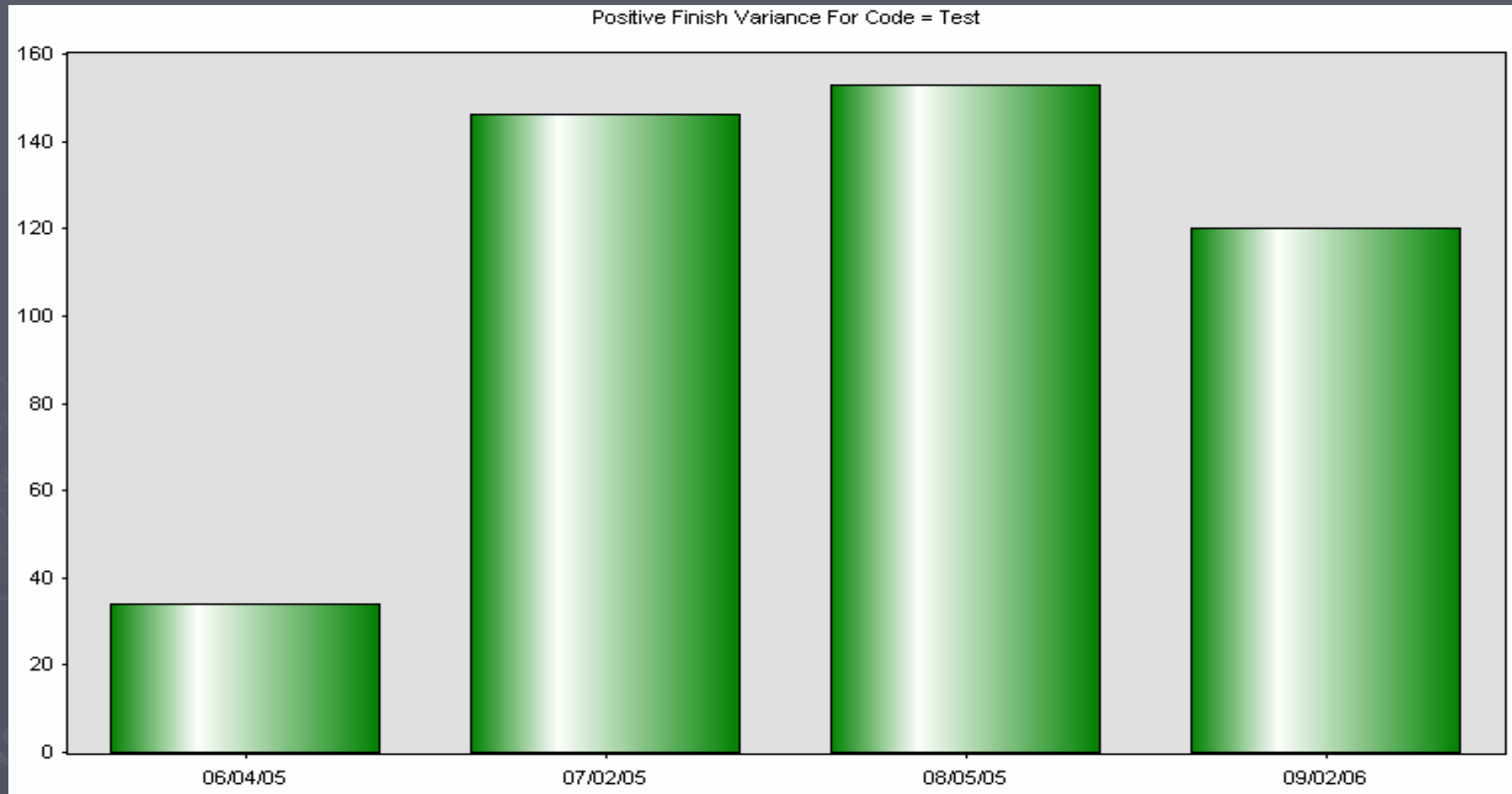


# Task Day Burndown



# Had Problems, Getting Better

09/02/06 is 09/02/05



# Constraints

Additional Detailed Information

Distributions    Choquepoints/Averages/Other    Aggregations/Burndowns    **Constraints**

Counts Based on Progress and Activity Type

	Summary	MS	Task	0%	In Prog	100%	Unfiltered Total	Filtered Total
As Soon As Possible	497	201	884	455	83	1040	1578	347
As Late As Possible	0	0	6	0	1	5	6	1
Start No Earlier Than	0	92	189	58	5	218	281	63
Finish No Earlier Than	0	10	44	3	0	51	54	3
Start No Later Than	0	0	0	0	0	0	0	0
Finish No Later Than	0	1	0	0	0	1	1	0
Must Start On	0	3	0	1	0	2	3	1
Must Finish On	0	6	0	2	0	4	6	2
Deadlines	0	0	7	0	1	6	7	1

Honor Constraint Option Set ☐

Ok

# Resource Information

**Detailed Resource/Metrics Information**

Tasks							Summary		
	Work	Base Work	Act Work	Plan	In Prog	Comp		Work Var	
<b>0 Hours</b>	344	608	625	59	9	276	< -240 Hours	2	<b>Effort Driven</b>
<b>&gt; 0 &lt;= 8</b>	72	53	72	0	2	70	< -120 >= -240	3	874
<b>&gt; 8 &lt;= 20</b>	41	23	37	7	0	34	< -60 >= -120	18	<b>Fixed Units</b>
<b>&gt; 20 &lt;= 40</b>	155	127	108	47	0	108	< -20 >= -60	16	522
<b>&gt; 40 &lt;= 80</b>	148	127	112	34	4	110	< 0 >= -20	17	<b>Fixed Duration</b>
<b>&gt; 80 &lt;= 120</b>	100	77	68	33	0	67	<b>0 Variance</b>	781	601
<b>&gt; 120 &lt;= 160</b>	150	54	47	103	3	44	<b>&gt; 0 &lt;= 20</b>	18	<b>Fixed Work</b>
<b>&gt; 160 &lt;= 200</b>	43	10	12	31	0	12	<b>&gt; 20 &lt;= 40</b>	42	0
<b>&gt; 200 &lt;= 240</b>	17	14	15	1	1	15	<b>&gt; 40 &lt;= 80</b>	32	
<b>&gt; 240 &lt;= 480</b>	27	24	22	4	1	22	<b>&gt; 80 &lt;= 120</b>	34	
<b>&gt; 480 &lt;= 1000</b>	19	5	5	14	0	5	<b>&gt; 120 &lt;= 240</b>	135	
<b>&gt; 1000</b>	7	1	0	7	0	0	<b>&gt; 240 Hours</b>	25	
	<a href="#">Graph</a>	<a href="#">Graph</a>	<a href="#">Graph</a>	<a href="#">Graph</a>	<a href="#">Graph</a>	<a href="#">Graph</a>		<a href="#">Graph</a>	
<b>Total Hours</b>	95121	43035	1299					46098	
		49024	51552	42270					

[Ok](#)

# Baseline, Forecast and Previous Period Metrics

**Detailed Resource/Metrics Information**

**Late Start/Late Finish - Progress Metrics** Time Frame From: 05/21/2005 To: 06/04/2005

**Baseline and Forecast Status Period Metrics** **Cummulative, Task Density, and Last Status Period Metrics**

	Baseline Starts				Baseline Finishes			
	Total	Sum	MS	Task	Total	Sum	MS	Task
Number in Status Period	35	8	9	18	39	9	9	21
On Time Start/Finish	23	6	4	13	16	1	4	11
Start/Finish Within Timeframe	0	0	0	0	0	0	0	0
Started/Finished Previously	4	0	1	3	8	1	1	6
New Lates (Didn't Start/Finish)	8	2	4	2	15	7	4	4

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	Previous Period Starts				Previous Period Finishes			
Past Lates Still with Us	5	2	0	3	23	17	0	6
Caught Up Starts and Finishes	2	0	0	2	3	1	0	2

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	Future Period Starts				Future Period Finishes			
Start/Finish From > Status Date	4	2	1	1	10	7	1	2

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	Forecast Starts				Forecast Finishes			
Forecasted	29	8	5	16	30	9	5	16
Started/Finished	29	8	5	16	29	9	5	15
Diff (Unstated/Not Rescheduled)	0	0	0	0	1	0	0	1

[Back](#) Phase 2 Tested

# Cumulative/Task Density

**Detailed Resource/Metrics Information**

**Late Start/Late Finish - Progress Metrics** Time Frame From: 05/07/2005 To: 06/04/2005

**Baseline and Forecast Status Period Metrics** **Cummulative, Task Density, and Last Status Period Metrics**

Cummulative Finishes					Task Density				
	Total	Sum	MS	Task		Total	Sum	MS	Task
Baseline	1324	312	248	764	Baseline	166	88	13	65
Planned	1335	317	252	766	Planned	149	84	11	54
Difference	-11	-5	-4	-2	Difference	17	4	2	11

Cummulative Actual Finishes					In Progress During Status Period Starting Previously				
	Total	Sum	MS	Task		Total	Sum	MS	Task
Baseline	1286	288	244	754	In Progress	41	41	0	0
Planned	1321	306	252	763					
Difference	-35	-18	-8	-9					

**Comparison to Last Status Period's Plan - Under Construction**

	Last Status Period Starts				Last Status Period Finishes			
Start/Finishes in Status Period	55	11	11	33	69	21	11	37
Completed on Time	55	11	11	33	68	21	11	36
Completed in Timeframe	0	0	0	0	0	0	0	0
Diff (Late Starts/Finishes)	0	0	0	0	1	0	0	1
Started/Finished Early	0	0	0	0	0	0	0	0

Ok Phase 2 Tested

# More Trends and Timephased Trends

- ▶ Look at What Happens over time.
- ▶ Combine different Metrics
- ▶ Defensive Metrics – Use Metrics to tell a story.

# Comparing Baseline and Forecast

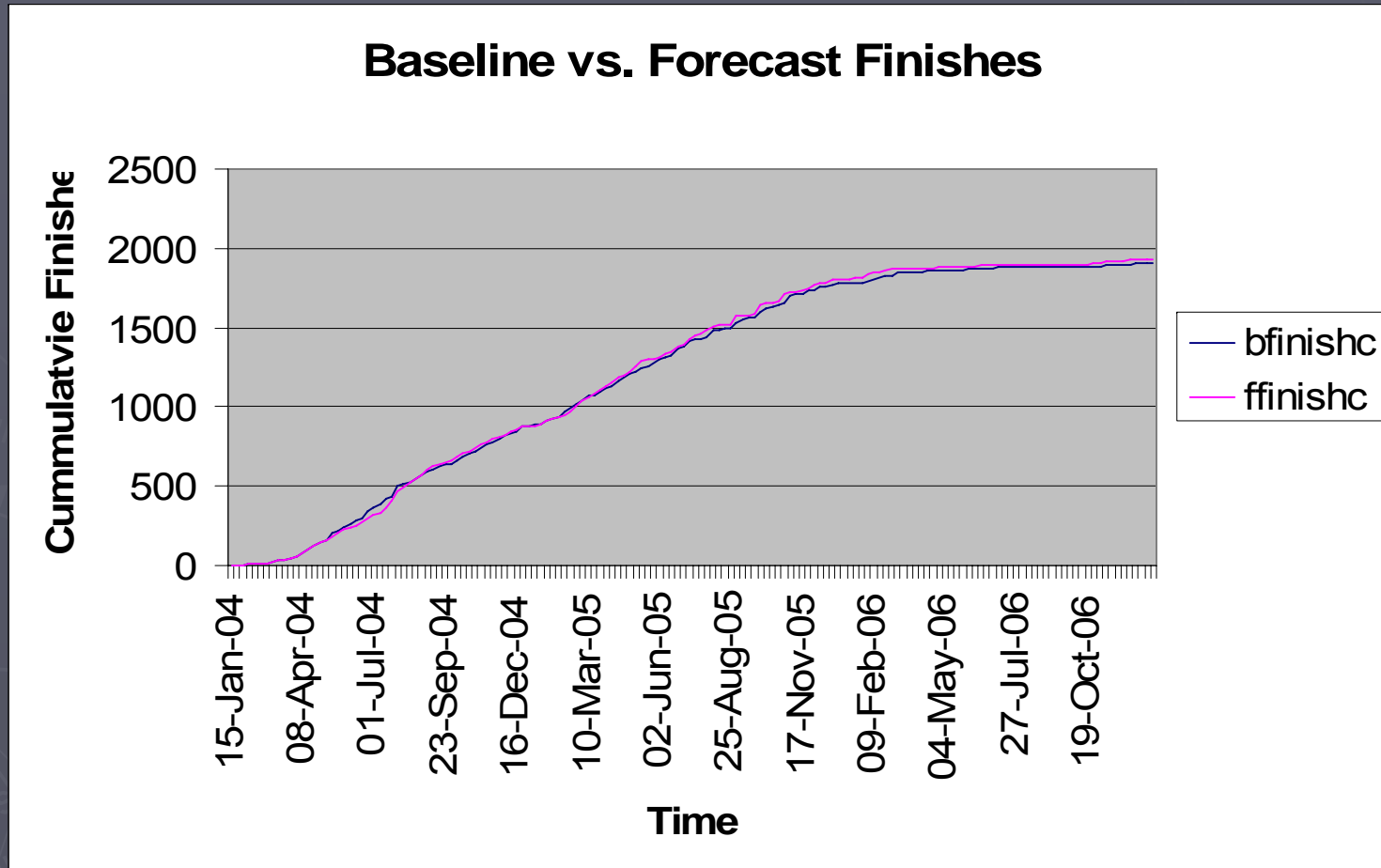
## Distributions Give Idea of Weight

### Duration Distribution By Projects - Summary

12/12/06

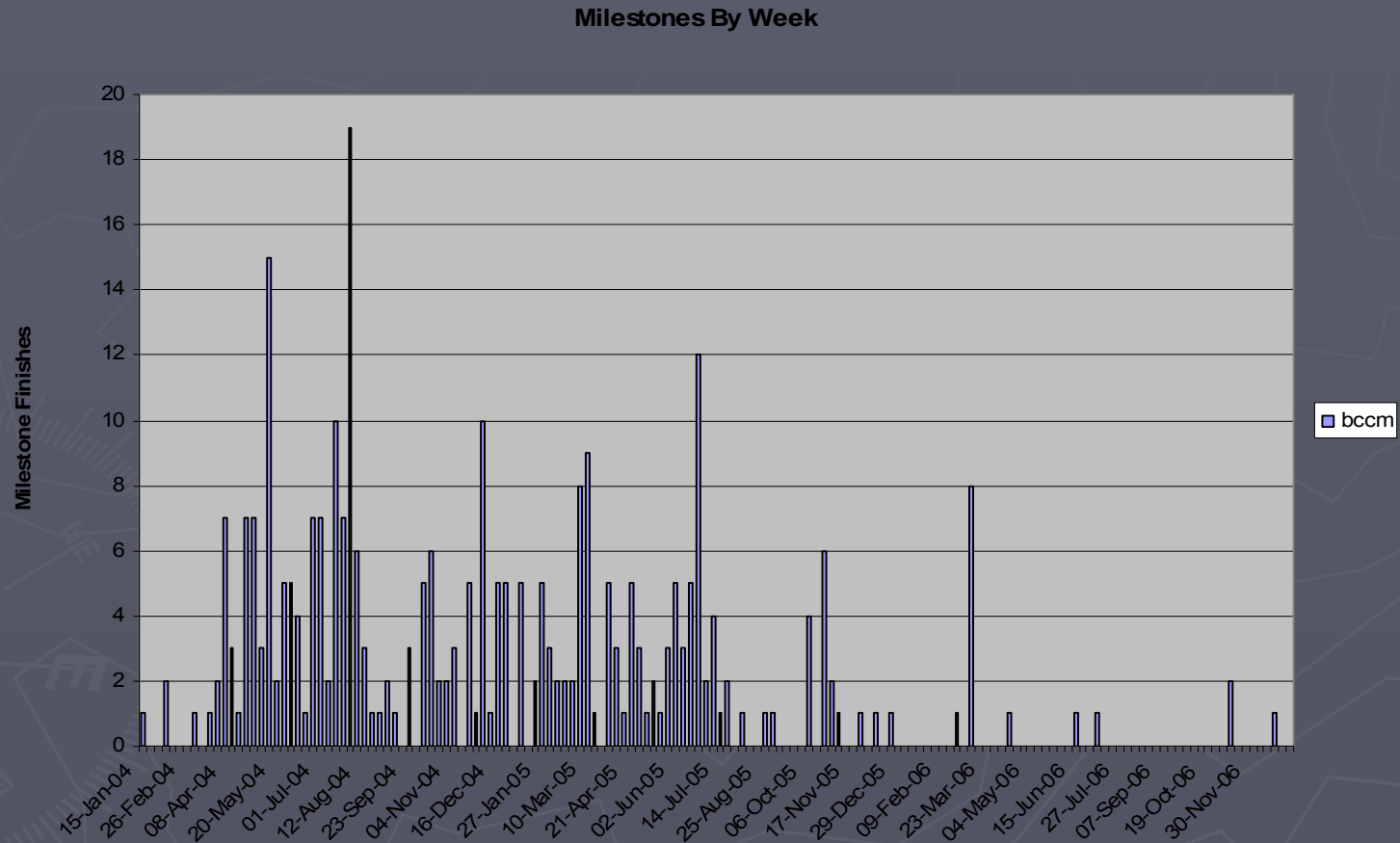
Status Date	Project Name		0 Days	> 0 <=10	>10 <=20	>20 <=40	>40 <=60	>60 <=120	> 120 <= 240	> 240
Sort Code: Test										
06/04/05	Sample Project for Analysis 060405	Base Dur	57	93	185	55	4	13	7	3
		Duration	57	92	179	62	4	14	6	3
		Difference	0	1	6	-7	0	-1	1	0
07/02/05	Sample Project for Analysis 070105	Base Dur	45	80	174	48	4	13	7	3
		Duration	45	80	165	55	6	14	6	3
		Difference	0	0	9	-7	-2	-1	1	0
08/05/05	Sample Project for Analysis 070105	Base Dur	35	59	142	45	4	13	7	3
		Duration	35	59	135	52	4	14	6	3
		Difference	0	0	7	-7	0	-1	1	0
09/02/06	Sample Project for Analysis 070105	Base Dur	33	48	111	33	4	13	7	3
		Duration	33	48	110	34	4	14	6	3
		Difference	0	0	1	-1	0	-1	1	0

# Baseline Vs. Forecast/Actual



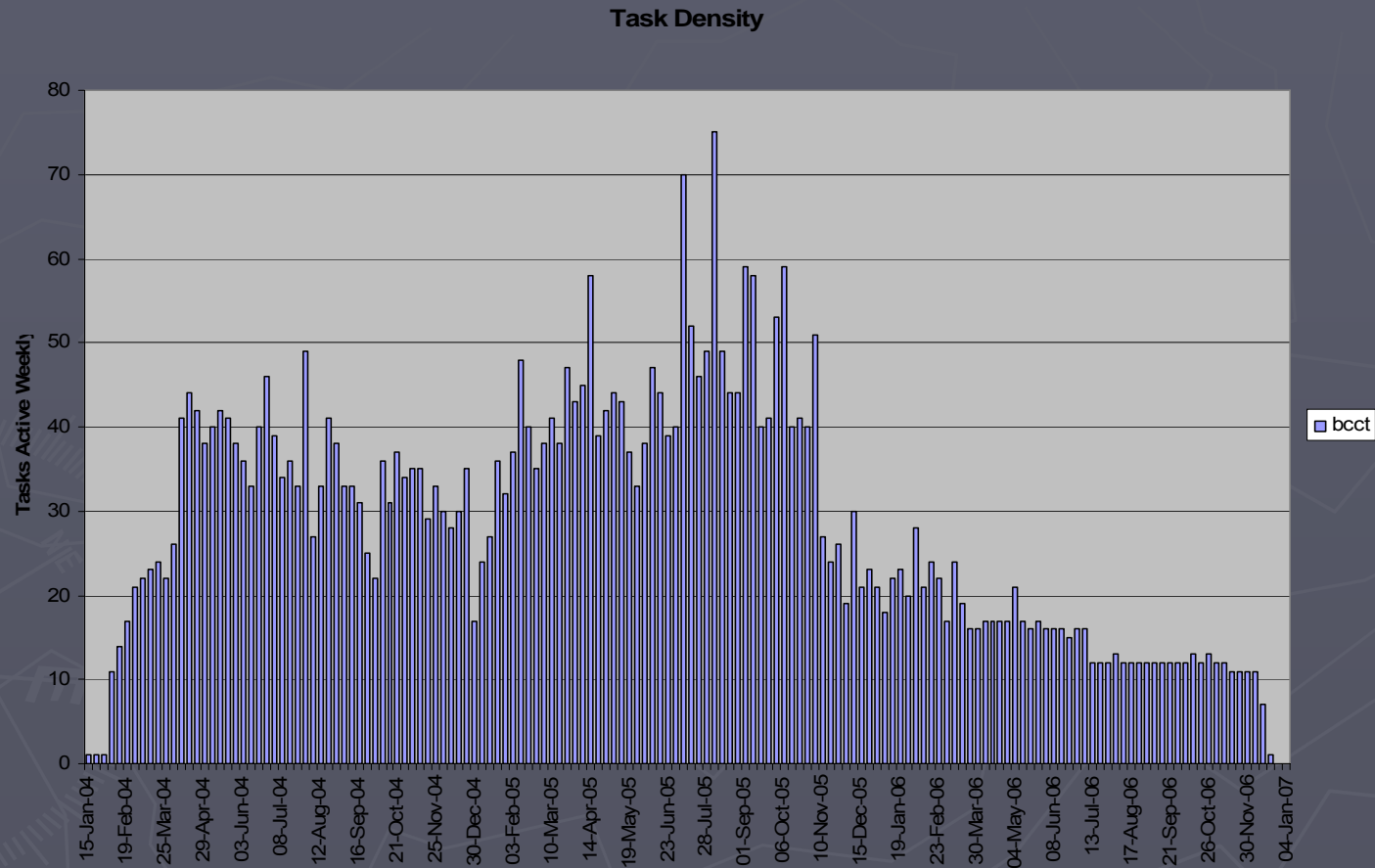
# Milestones By Time

Subcontract MS, Givers/Receivers, Lower Level Events

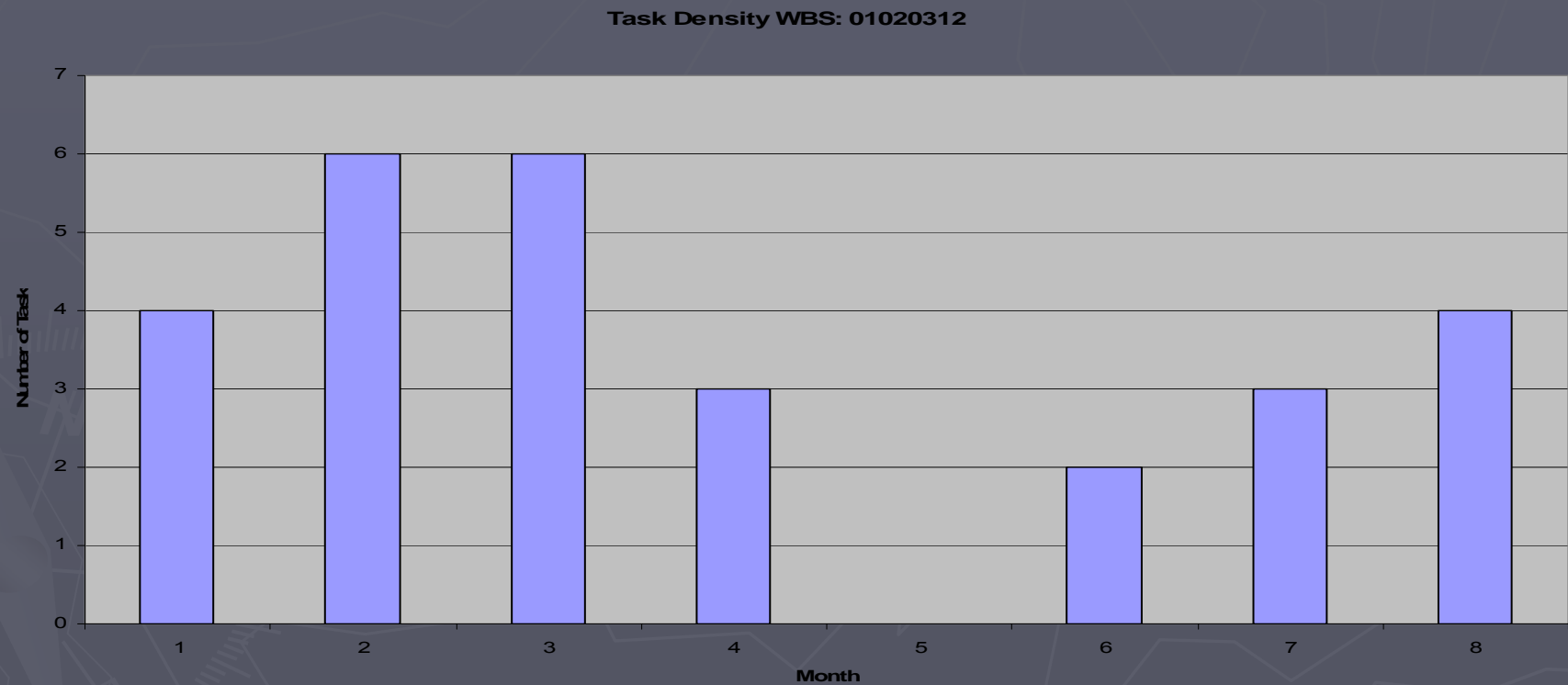


# Task Density

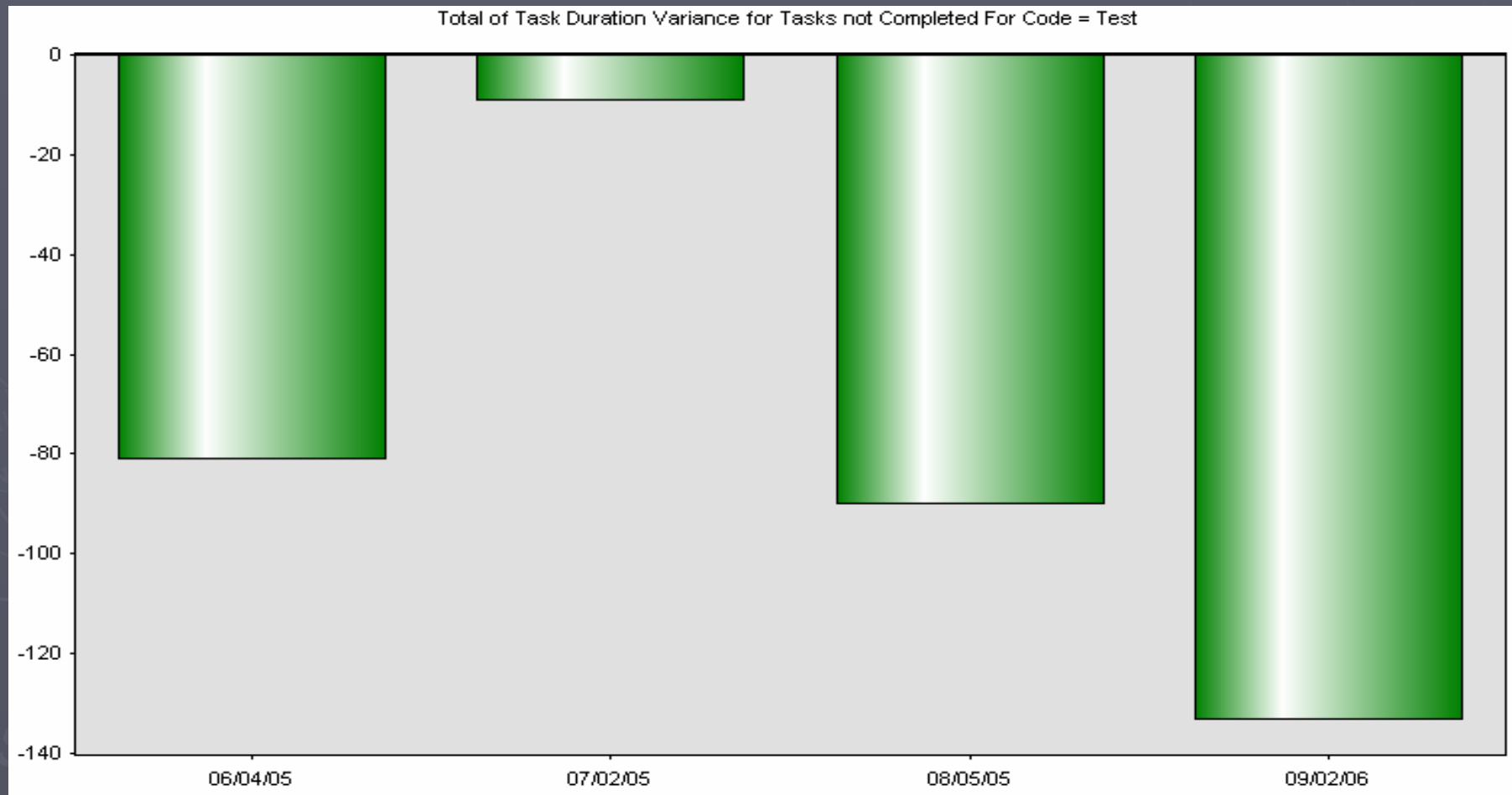
How many tasks are in play at any one time



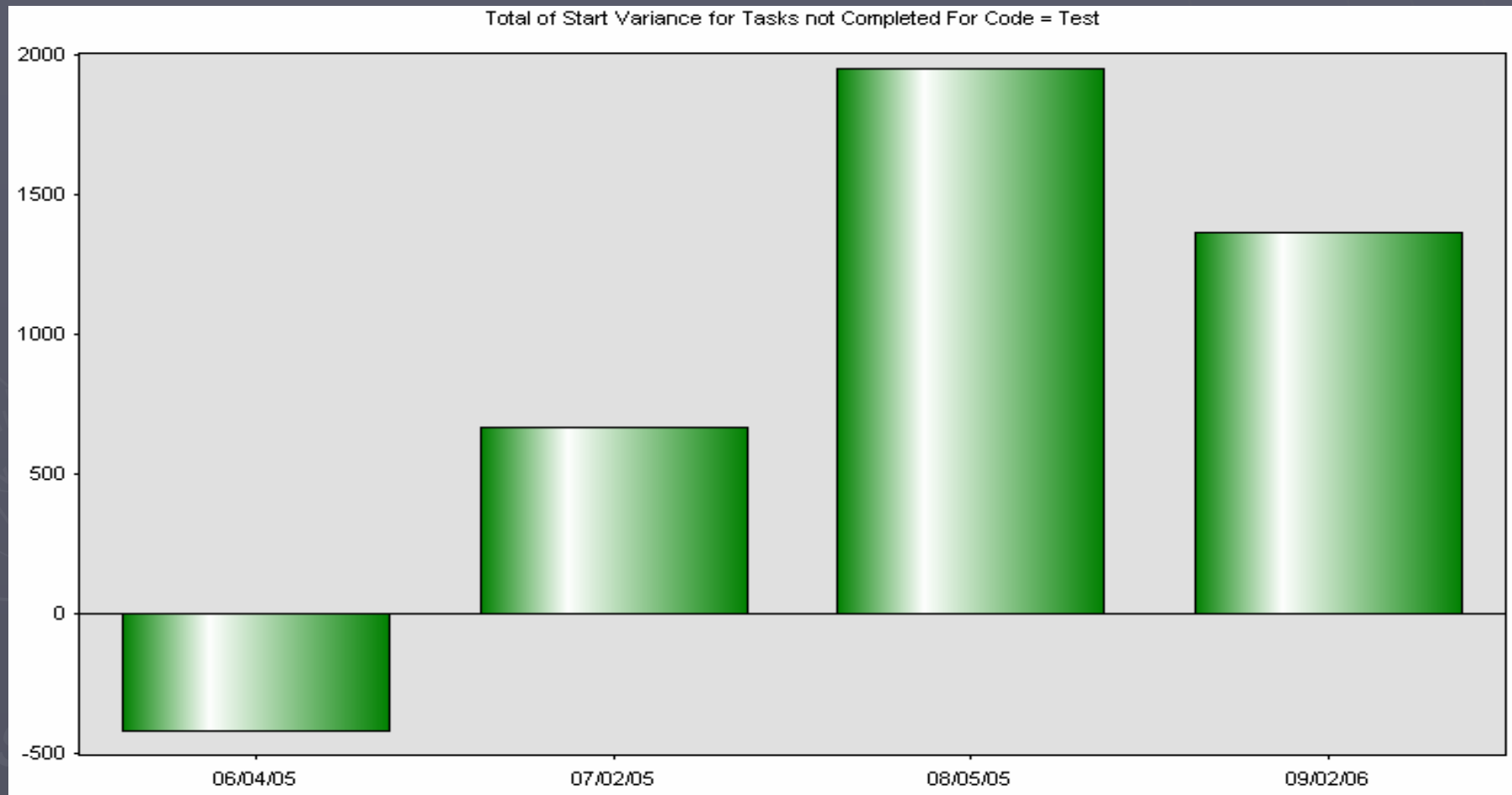
# Task Density for 1 WBS Element



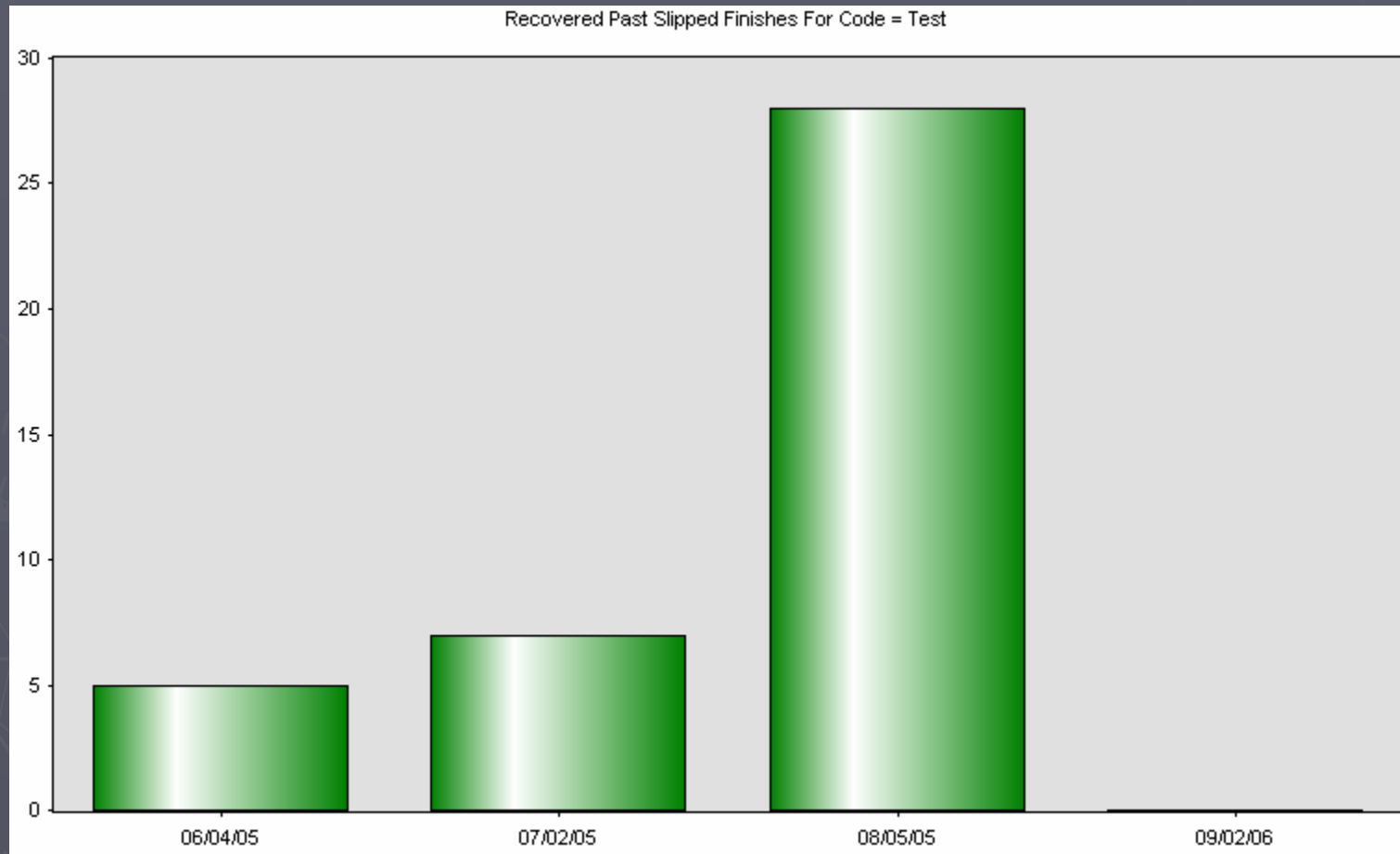
# Is -DV Good or Bad



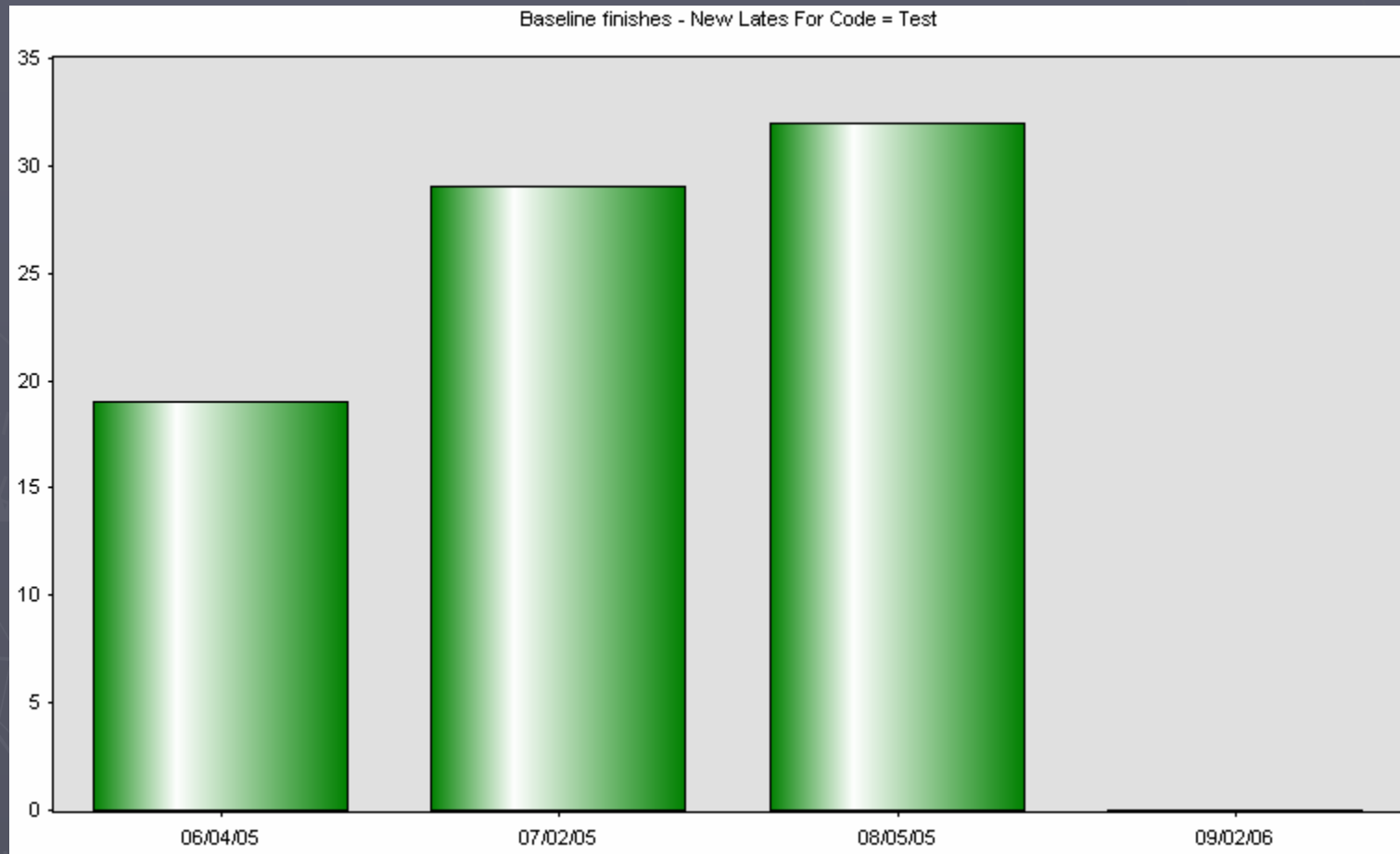
# It's Bad



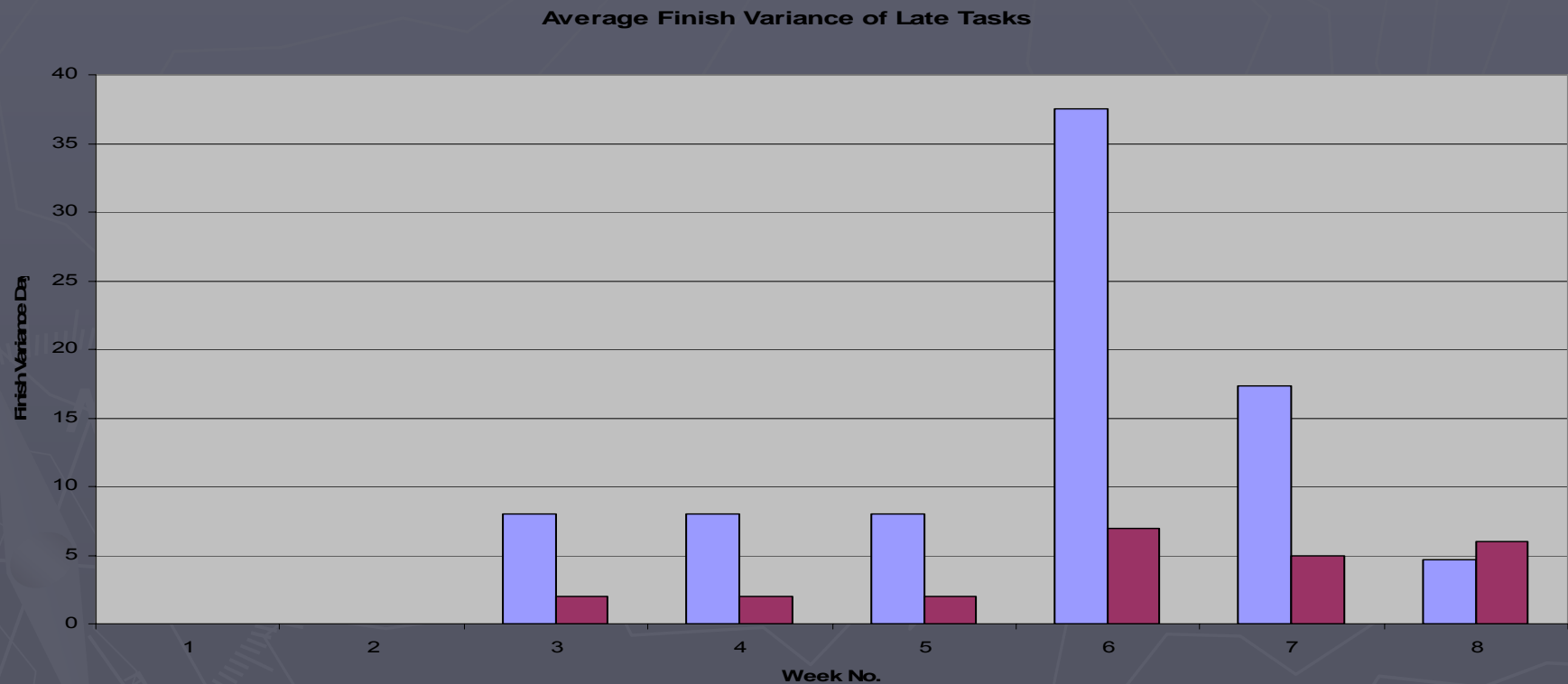
# Are We Recovering?



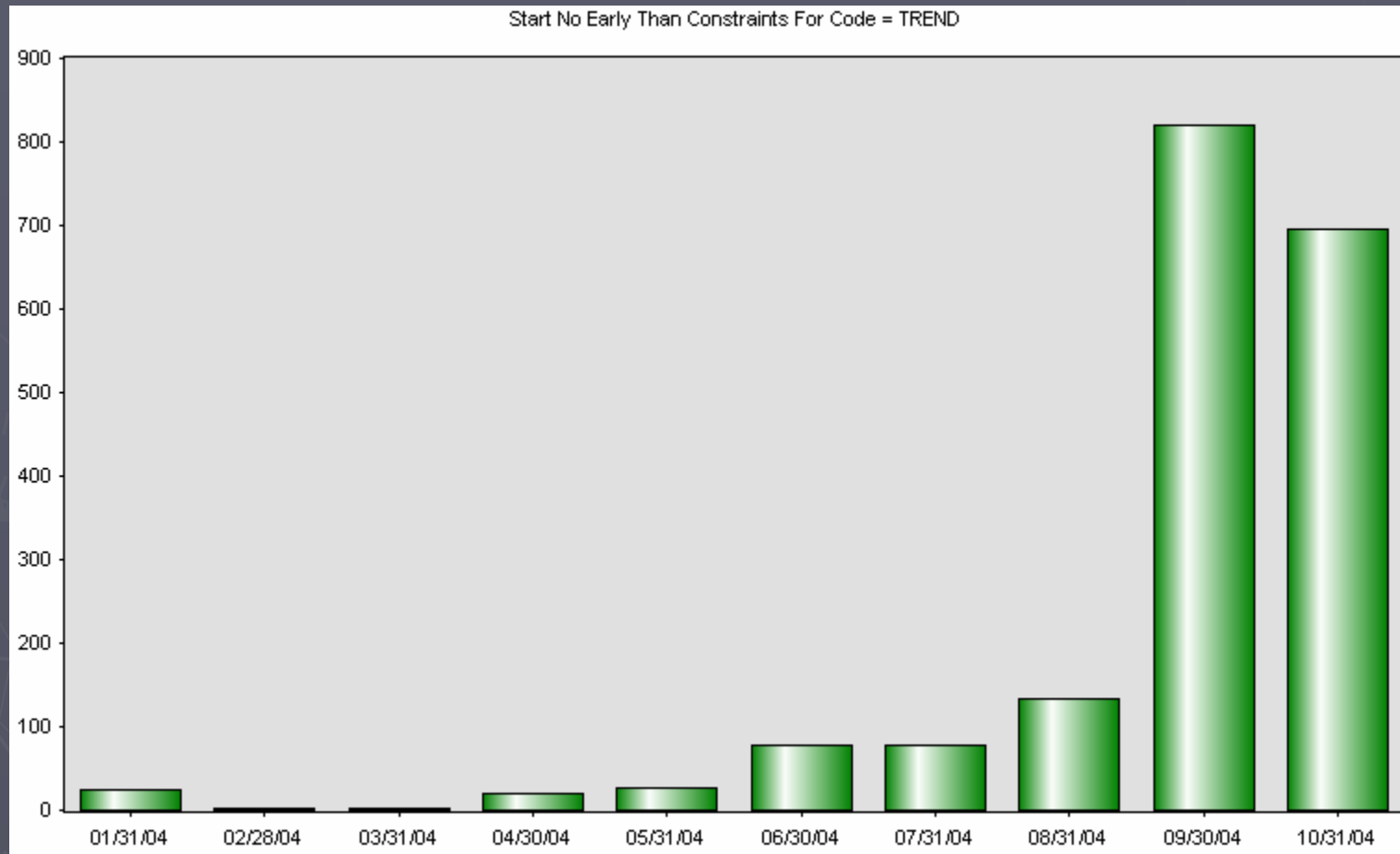
# Not Really



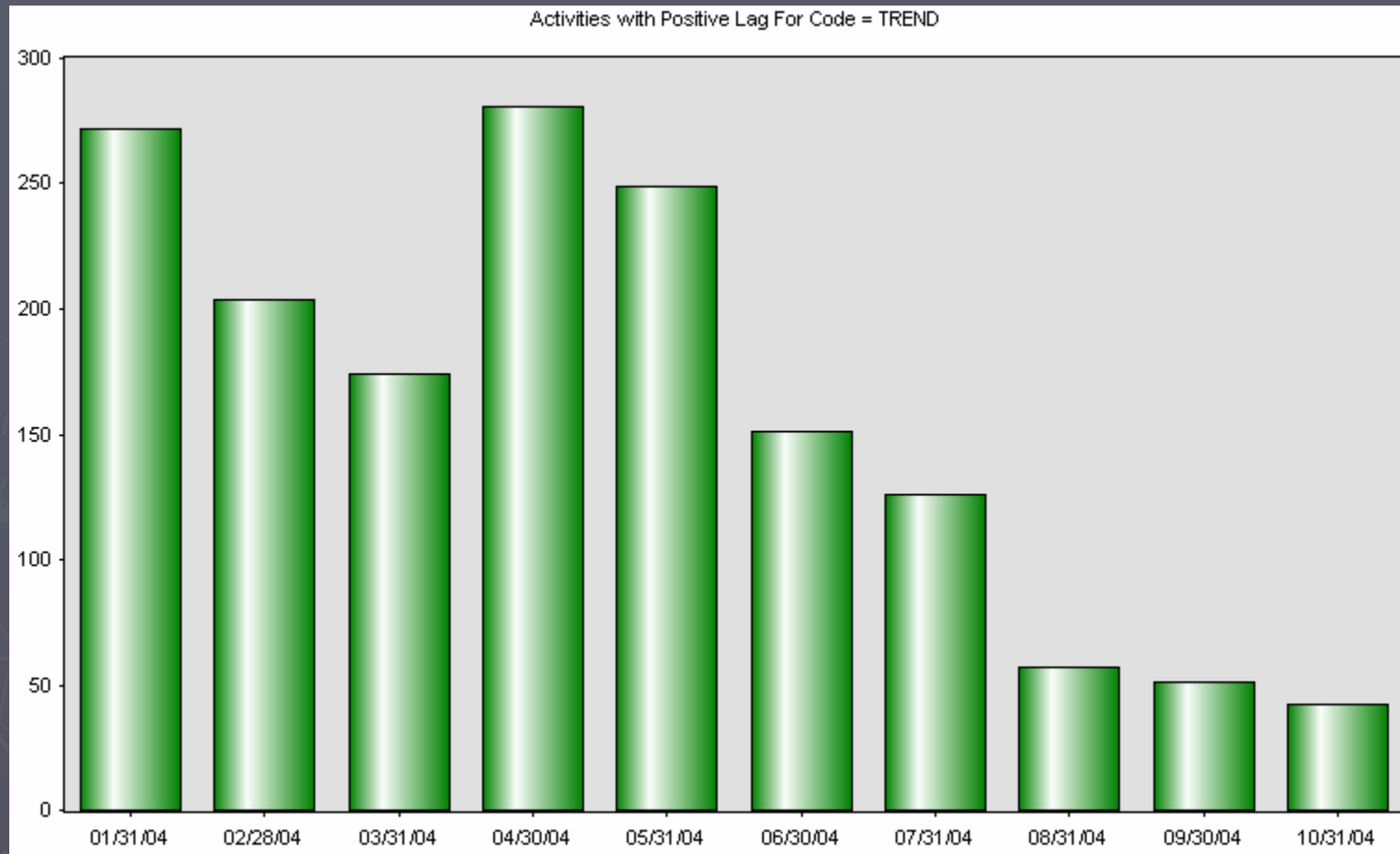
# When are We Tackling the Big Boys?



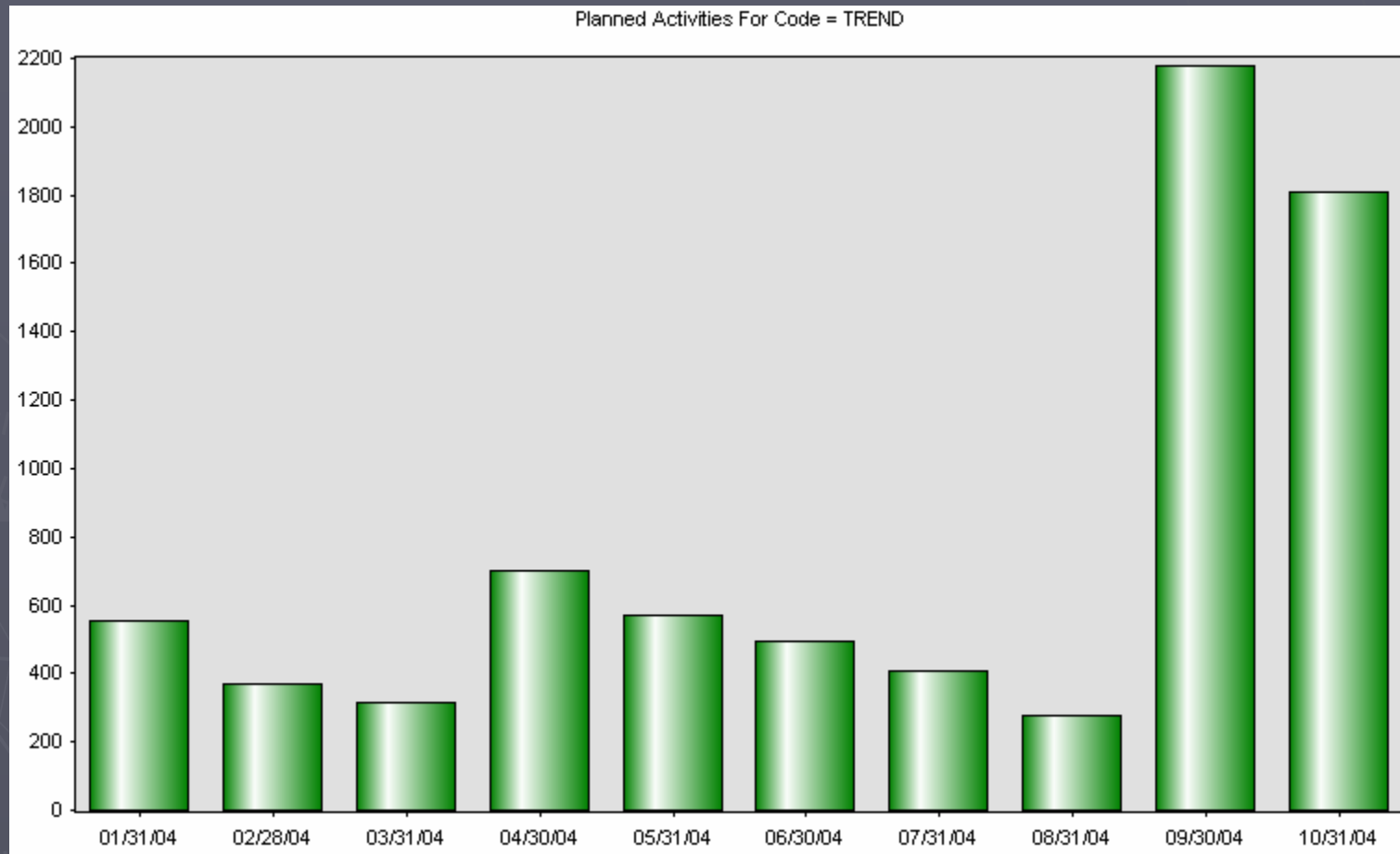
# Did a RW and Now...



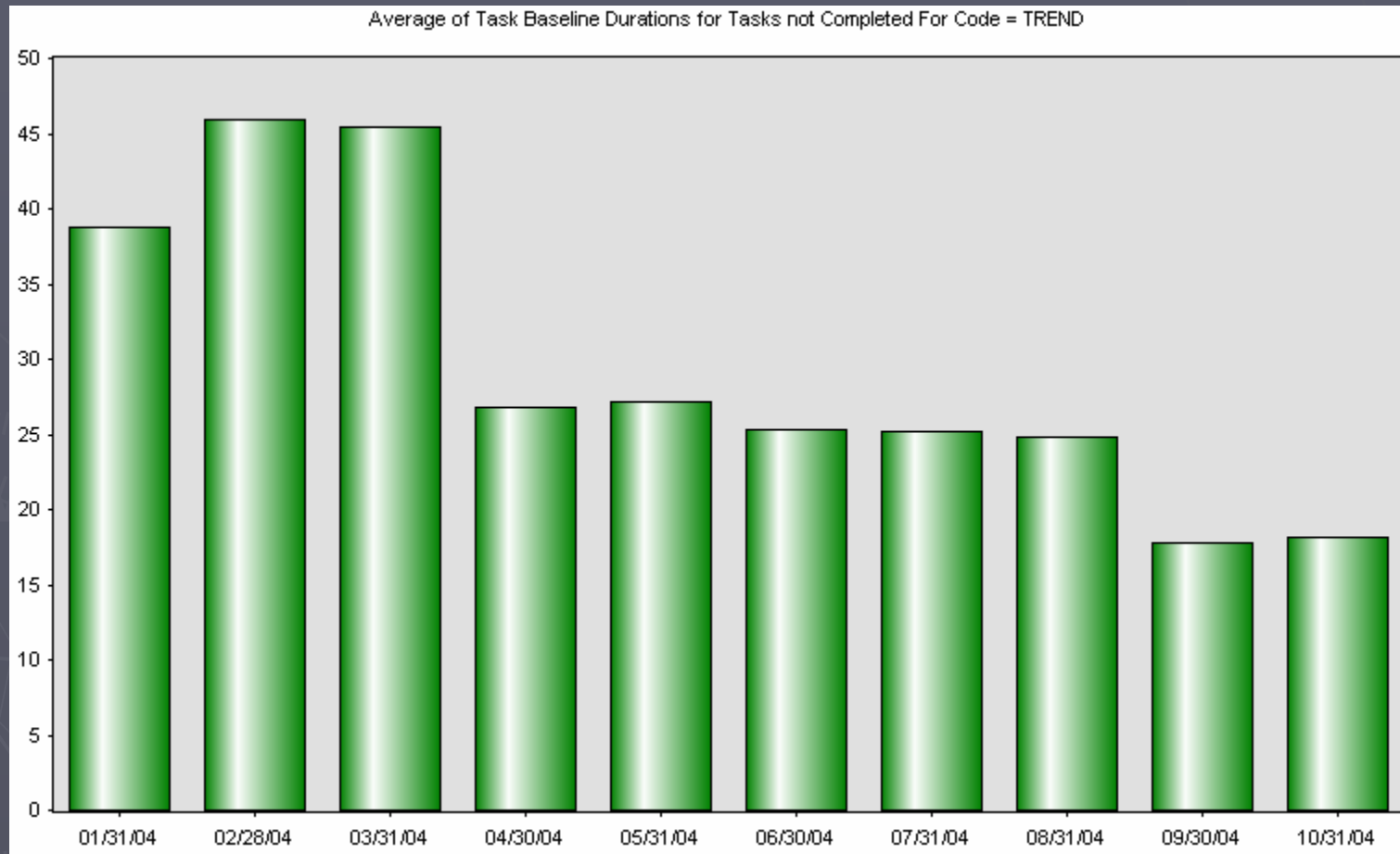
# But – Greatly Reducing Lag Use



# But 3X Number of Tasks/MS



# Task Duration Down – Lower level of Detail



# So What Happened

- ▶ Went to a Lower Level of Detail
  - Smaller Durations
  - More Tasks and Milestones
- ▶ Got away from using lags
- ▶ This is an IMS Level Schedule, many represent interactions between IPTs
- ▶ Tons of Spec Reviews etc.

# Comprehensive Comparison



# Activity/Date Tab

Schedule Detective						Schedule Comparison Information Display								
Compare this Project								To This Project						
Name	<div>Sample</div>						Name	<div>Sample</div>						
File Name							File Name							
Code	<div>atest1</div>		Status Date	<div>12/17/2004</div>			Code	<div>atest</div>		Status Date	<div>10/22/2004</div>			
<b>Results</b>														
Activity/Date Comparison				Progress		Variances and Slacks				Resources and Relationships				
	Same	Diff		Same	Diff		Same	Early	Late	Task	MS	Sum		
Name	<div>1,257</div>	<div>90</div>	Sum	<div>1,347</div>	<div>2</div>	Start	<div>1,139</div>	<div>85</div>	<div>123</div>	<div>101</div>	<div>36</div>	<div>70</div>		
			Task	<div>1,332</div>	<div>15</div>	Finish	<div>1,068</div>	<div>159</div>	<div>120</div>	<div>130</div>	<div>37</div>	<div>109</div>		
			MS	<div>0</div>	<div>1,347</div>	B Start	<div>1,347</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>		
	Total	Task	MS	Sum		B Finish	<div>1,347</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>		
New	<div>142</div>	<div>95</div>	<div>27</div>	<div>20</div>		Dur	<div>1,130</div>	<div>145</div>	<div>72</div>	<div>90</div>	<div>2</div>	<div>123</div>		
Deleted	<div>864</div>	<div>528</div>	<div>156</div>	<div>170</div>		Same	<div>Change</div>	<div>New</div>	<div>Delete</div>	<div>Task</div>	<div>MS</div>	<div>Sum</div>		
History Changed	<div>619</div>	<div>358</div>	<div>141</div>	<div>120</div>	Deadline	<div>1,347</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>	<div>0</div>		
					Cons Date	<div>1,347</div>	<div>0</div>	<div>12</div>	<div>4</div>	<div>0</div>	<div>0</div>	<div>0</div>		
Deleted History				Change	Cons Type	<div>1,328</div>	<div>19</div>	<div>3</div>		<div>12</div>	<div>7</div>	<div>0</div>		
	<div>0</div>													
		Subproject		<div>0</div>										
		External		<div>0</div>										

# Progress Tab

Results

Activity/Date Comparison		Progress		Variances and Slacks		Resources and Relationships					
Actual Dates				Progress Values							
	Same	Dif	New	Del	Task	MS	Sum	% Complete Same	2	By Act Type	
Act Start	1,347	73	250	1	0	0	0	% Complete Changed	313	Task	132
Act finish	1,347	0	223	0	0	0	0	% Complete Increased	313	MS	40
								% Comp Decreased	0	Sum	139
								% Complete Was 0 (Started)	253		
								No Longer 100%	0		
								In Progress no change in status	2		
Finish State Information											
	New Finish	Was Complete Now Not									
Total	223	0		Remaining Duration							
Task	124	0		Remaining Dur Increase				15	By Act Type		
MS	40	0		Remaining Dur Decrease				299	Task	154	
Sum	87	0		Remaining Dur Was Act Dur (Progress Started)				245	Sum	157	

# Variance and Slack Tab

Results

Activity/Date Comparison		Progress		Variances and Slacks		Resources and Relationships				
Variances										
	Same	Early	Late	New Bad	Better	Task	MS	Sum	Free Slack	
St Var	1,130	111	106	64	27	121	37	59	Free Slack Decreased	334
Fin Var	1,068	163	116	90	62	135	38	104	Free Slack Increased	11
Dur Var	789	470	88	18	455	341	3	211	Free Slack Change - Tasks	71
Total Slack								Free Slack Change - Milestones		
Total Slack Same		627		By Act Type		Free Slack Change - Summary		210		
Total Slack Changed		720		Task		383				
Total Slack Decreased		718		MS		120				
Total Slack Increased		2		Sum		211				
Total Slack Repaired		0								
Total Slack Broke		274								

# Resources and Relationships Tab

## Results

Activity/Date Comparison						Progress		Variances and Slacks		Resources and Relationships					
Work Related and Work Variance							Relationship Comparison								
	Chg	Less	Plus	Was 0	Task	Summay	More	Less	More Non-FS	Task	MS	Summay			
Work	171	117	54		49	120	Preds	56	23	17	62	16	1		
Act Wk		3	190	137	78	115	Succs	95	63	17	89	67	1		
Base Wk		34	257		167	124									
Wk Var		310	57	22	179	186									
Work Related and Work Variance							Predecessor Changes by Rel Type and Act Type								
	Chg	Task	Summay				Chg	Task	MS	Summay					
Resources	2	1	1				FS	84	67	16	1				
Task Res Type	0	0	0				FF	16	16	0	0				
Effort Driven	2	1	0				SS	0	0	0	0				
							SF	1							

# Conclusion

- ▶ There is a lot of Data in a schedule
- ▶ Find the right measurement strategy
- ▶ Look for answers, but also more important, look for the questions

Contact PM Metrics at [johnmtnair@aol.com](mailto:johnmtnair@aol.com) or [info@pmmetrics.com](mailto:info@pmmetrics.com)

# Supporting Information

## More Detailed Look at Screens

# Activities

- ▶ Types of Activities, Tasks, Milestones, and Summary
  - Tasks may represent work packages or more likely EV Milestones
  - Milestones may be part of a strategy for performance measurement
  - Could use Summary Activities for Work Packages or Cost Accounts, WBS Elements, Etc.
- ▶ Start, Finish, and Isolated Activities give indication of linking in schedule and/or number of Deliverables.
- ▶ Summary Logic is generally not acceptable

# Relationships

- ▶ Ratio gives indication of linking
- ▶ Ratio Type usage important in determining structure health of schedule and possible hiding of lateness (FS to SS or FF)
- ▶ Beware of Schedulers using SF
- ▶ The Great Debate: Lags Versus Constraints
- ▶ Neg Lags can help model Total Slack Better

# Constraints

- ▶ Honor Constraints Option is Dangerous
- ▶ Hard Constraints Should be used Sparingly
  - Use for Deliverables
  - Deadlines in MS Project can act as Hard Constraints
- ▶ Develop a strategy for using soft constraints
  - Logic still wins
  - Ersatz Resources – Used to Model Resource Availability

# Progress

- ▶ Numbers of Complete, In Progress and Planned Activities
- ▶ Missing Baselines
- ▶ Should have Started/Finished – Tasks unstatused before the Status Date
- ▶ Future Status – Out of Sequence Status

# Duration and Duration Variance

- ▶ Long Duration Tasks
- ▶  $>0$  Duration Variance are tasks that have taken longer than expected
- ▶  $<0$  Duration Variance are tasks that have completed sooner than expected
- ▶ Duration Variance useful for History
- ▶ Useful for Dynamic/Radical/Agile PM

# Finish Variance

- ▶ Used Along with Total Slack for standard analysis of schedules
- ▶ Have User Definable Distribution
- ▶ Finish Variance calculated on Interim Dates helps gauge performance if Baseline not relevant.

# Total Slack and Free Slack

- ▶ Large values show missing relationships
- ▶ Negative values show missed Deliverables or delay of entire project
- ▶ Standard method for identifying problem areas
- ▶ Depends on Constraints Being Properly Used
- ▶ Decreasing Free Slack means compressing schedule.

# Distributions

- ▶ Start Variance, Finish Variance, Duration Variance, Total Slack and Lags
- ▶ Duration Distribution gives an idea of how discrete you are planned
- ▶ Gives idea of scope of problems rather than just the long pole

# Chokepoints

- ▶ Breakpoints are an analysis of how many relationships a task has
- ▶ As with important reviews etc., tasks with many relationships are important to track

# Other Information

- ▶ Subprojects
- ▶ Task Calendars
- ▶ Deadlines
- ▶ Elapsed Duration
- ▶ Estimated Duration

# Averages

- ▶ Average Durations give an idea of granularity of the tasks.
- ▶ Changes/Trends of averages can show degradation or the turning around of a project.

# Baseline Metrics

- ▶ Determine what should have been worked
- ▶ Started/Finished on Exact Day
- ▶ Started/Finished within Status Period
- ▶ Start Early/Finish Early
- ▶ What was Not Started or Finished
- ▶ Previous Lates and Healed
- ▶ Results by Activity Type

# Forecast Date Metrics

- ▶ Metrics based on Forecast Dates
- ▶ Metrics for both Starts and Finishes
- ▶ Metrics results by Activity Type
- ▶ Negative Differences mean tasks not completed and not re-forecast

# Previous Status Period

- ▶ How is the schedule doing week to week or status period to status period
- ▶ Starts/Finishes Within Status Period
- ▶ Actual Starts/Finishes within Status Period
- ▶ Start Early/Finish Early
- ▶ By Activity Type

# Task Density

- ▶ Concurrent tasks are all tasks scheduled during a time period.
- ▶ The more tasks in the works during a period, the greater chance of not meeting deliverables
- ▶ How many tasks can we effectively manage, do we have structure problems?
- ▶ Defining the Bow Wave